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AUTHOR Fredrickson, Scott
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ABSTRACT

The University of Alaska Southeast (UAS) has been given the responsibility for providing distance education in Alaska, a vast state geographically with a disperse population. With the vastness of the area for which UAS is responsible for providing educational opportunities, the only cost effective method to meet those responsibilities is distance education. Courses over distance are provided using a variety of technologies; the most widely used has been audio teleconferences. Other media used include videocassette recordings, faxes, electronic mail, communications satellite broadcasts, and the University of Alaska Computer Network (UACN). The UACN system uses several mainframes to connect all parts of the state. Electronic mail is used three different ways by UAS: as the sole delivery source for instruction, as a major feature or backbone of a course, and as a supplement to a course. Currently UAS has four semester-long courses and six or seven workshop classes that are conducted solely on electronic mail. Immediate access to the system at the users' convenience is a prime motivating factor in its use. Problems associated with electronic mail include transmission static, limited access to modems, lack of interaction among students, and unwillingness of professors to use the technology. Advantages of electronic mail include convenience, cost effectiveness, improvement of communication skills, records of all correspondence, student participation, and rapidity of response time by professors. (DB)

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Telecommunications and Distance Education:

Using Electronic Mail to Teach University Courses in Alaska

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Scott Fredrickson

The University of Alaska

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Alaska is one of the smallest states in terms of population, we only have 500,000 residents. However it is the physically largest state in the union. The vastness of the state causes lots of problems for higher education (and K-12 for that matter), but it provides lots of challenges also. The University of Alaska has three major academic units (what we call MAUs), the University of Alaska Anchorage, the University of Alaska Fairbanks, and the University of Alaska Southeast. Although there is a lot of overlap in several areas, the three MAUs have different missions. The University of Alaska Anchorage is the general higher education university in Alaska. They have a strong liberal arts philosophy and emphasis. The University of Alaska Fairbanks, is the major research university in Alaska. They are involved with Arctic research, petroleum research, and are even involved with space research. They have their own test range for rockets outside of Fairbanks, called Poker Flats. The University of Alaska Southeast is charged with being the distance education institution in Alaska; responsible for what we call "outreach courses." UAS is one institution which is comprised of three campuses: one at Juneau, one at Sitka, and one at Ketchikan. The Southeast portion of Alaska has several hundred islands, with a few small towns and many isolated villages scattered among them. UAS attempts to provide higher education for them. Sometimes, this consists of flying in a professor or adjunct faculty member to provided on-site courses, but most of the time, it consists of providing educational opportunities via some method of distance education. We provide distance education courses to small Alaskan islands in the Pacific, to locations throughout isolated areas in Alaska and the Yukon, and to a variety of military installations in the central part of the state. Our basic philosophy is "have courses, will travel."

Distance Education Approaches

With the vastness of the area for which UAS is responsible to provide educational opportunities, the only cost-effective method to meet those responsibilities is distance education. A few sites have populations which are large enough to enable us to conduct on-site courses, but most sites have only a few students at any given time. It simply is not cost-effective to provide on-site instructors for small groups. We provide courses over distance via a variety of technologies.

Audioconferences

Up to now, our most widely-used technology has been audioconferences. We use audioconferences to conduct all of our university-wide meetings such as the Academic

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Curriculum Committee, the Faculty Senate, Strategic Planning Committee, and so forth. The faculty from each school (Business and Public Administration; Education, Liberal Arts, and Science; and, Career and Continuing Education) use audioconferences to conduct faculty meetings. Since faculty are extremely familiar with audioconference techniques and equipment, it has historically been our major distance education technology.

Video-based

We also use a variety of video-based approaches. We use pre-recorded video cassettes mailed to students, live interactive and taped satellite broadcasts, and are looking at the possibility of using Instructional Television Fixed Service (ITFS).

University of Alaska Computer Network

The University of Alaska system has a state-wide computer system based on the Juneau campus of UAS called University of Alaska Computer Network. This system, which we call UACN, has a variety of functions -- statistical programs can be run, such as SPSS and SAS; several programming languages can be used, such as COBOL, FORTRAN, Pascal, BASIC, C, and so on; library access and bibliographic data can be gathered; along with a variety of other administrative and academic uses. Two major components of the UACN and the thrust of this presentation are the electronic mail and electronic conferencing features.

Electronic Mail

Many courses are taught which use the electronic mail component of the system. Electronic mail, or E-mail as it is generally called, is simply a message handling function of our Vax machines. It is similar to the US Mail in that messages are written and sent to specific addresses. The difference is the E-mail gets there instantly (or what seems like instantly), and is date-, time-, and location-stamped. The advantage to using it in a class setting is that students can read and send messages at their convenience to their professors or to other students. There are courses which are taught solely on the system, some which use the system for a "backbone" structure, and other courses which use it to merely supplement another distance education component.

Electronic Conferencing

The UACN also has an electronic conferencing system called PortaCOM. An electronic conferencing system is similar to a classroom bulletin board. People can place notices on the board and other people can read them and respond to them. It differs from E-mail in that messages are not sent to individual accounts. They are posted for public or quasi-public viewing. Although I do not personally know of any faculty member who uses PortaCOM as the *sole method* of providing distance delivered instruction, there are many professors who use it as a supplement to their classes.

Other Approaches

Several of the aforementioned approaches are used in combination to provide distance education access. Most of the video cassette-based courses have an audioconference portion to them. The

satellite-based interactive courses have audioconference office hours or E-mail assignment collection activities. In addition, faxed messages and old-fashioned US mail are also used.

Summary of Approaches

At UAS, we are used to using a variety of distance education approaches for providing instruction to our remote site students. We use audioconferences, faxes, interactive satellite broadcasts, pre-recorded video cassettes, electronic mail, electronic conferencing, and US mail to provide educational opportunities for our students. The most pervasive and cost-effective of all of our delivery systems, up to this point, is the electronic mail and electronic conferencing system.

E-Mail as a Delivery System in Alaska

The main focus of this presentation will be on the UACN and its use in providing educational opportunities to Alaskan higher education students at a distance. Although I have briefly described it earlier, I will get a bit more specific at this point. The UACN system uses several mainframes to connect all parts of the state. They are at the main campuses of UAA, UAF, and UAS. They interconnect and can be accessed from any part of the state. The specific machines are Vax 8600s, Vax 8800s and Vax 4000s. An IBM 3090 is used mainly for administrative purposes. The annual maintenance costs for the system is $45,000.

A Few Statistics about the System

The sub-system that UAS uses is called ACAD1, which stands for academic computer number 1. ACAD1 currently has 637 users, of which 90% use the E-mail component on a regular basis, which is defined as logging on at least three times per week. The PortaCOM conference, as of March 2, had a total of 89 conferences and 2943 users (who are called members). Users are not limited to users of ACAD1; users can sign on from anywhere in the state and enroll in a conference. Of the 89 conferences, 58 are public conferences, which anyone can join, and 31 are private conferences, which restrict membership to certain folks (such as the students in ED 402 or BIOL 236). Since December of 1991, there have been a total of 36,531 entries in the conferences. That is an average of 12.41 entries per member. After three months, entries are deleted.

The public conferences, naturally, have more members per conference than do the private conferences. There are 2620 members in the 58 conferences, and they have generated a mean of 10.68 entries per member, or a total of 27,984 entries. Each public conference has a mean of 45.17 members. The public conferences run the gamut of interest areas, such as Student Government, Ask Dr. Vax, Open Forum, users groups of a variety of ilks, Marine Advisory Program, Connectivity, Comic Books and other Collectibles, and so forth.

The private conferences tend to focus on class work and have fewer members. The 31 private conferences have a total of 323 members and have had 8,547 entries from the end of January, 1992 to March 02, 1992. They average 10.42 members per conference, but average 26.46 entries per member. A few conference titles are: Electronic Democracy, Alaska Science Projects Networks, Alaska Teacher Research Network, MEHS OA Project, Innovative Assessment, and

the like. Private conferences are created, generally for a specific class, and are deleted at the end of each semester.

A Variety of Uses of E-Mail

Although there are an infinite number of uses of E-mail in higher education, UAS tends to use it in three main ways: As the sole delivery source for instruction; as a major feature or backbone of a course; and to merely supplement a course. The major benefit of all of these uses, as noted previously, is that students and the professor get on the system and read and\or send messages at their convenience -- which might be 2:00 P.M. for one student and 2:00 A.M. for another. Another very important benefit to the students is a generally very fast "turn around" time for responses. In the old correspondence courses, students could send in a question and not receive an answer for many weeks. The last time we surveyed our distance students, they indicated the mean time for receiving responses from their professors was less than one day. Of course, some professors responded within minutes, while a few others only check their mail every few days. On average, the turn around time was and is very quick.

Sole Delivery System

Currently UAS has four semester-long courses and six or seven workshop-type classes which are conducted solely on E-mail. The instruction is presented to the learner in written form, and the user has the option of reading it on line, or downloading it to a printer or a file. This allows the student to access the instruction when it is convenient for the student. The student can read and re-read the information as many times as he wishes. Students can reply to the instructor, either on-line, which means that the student composes the answers/questions/responses while connected to the UACN system, or off-line. If the student is off-line, she can use a word processor to compose and edit the document. Once it is acceptable, she can get back on-line, up-load the document to the system, and send the message to the professor. Assignments and data from the professor can be sent the same way. Some classes require that all messages be sent to all of the students, in addition to the professor. A batch file can be created very easily which will take the message or messages the student wants to send to the professor and will send it to all of the other students. That feature can be turned off, if the student wants to send private messages to the professor.

Backbone System

Many of the courses that use E-mail, also use other distance education technologies to deliver instruction. They might be satellite-based, interactive courses, or audioconferences, or video cassette-based courses and so on. However, they all use the E-mail system as a major component. Again, immediate access to the system at the users' convenience is a prime motivating factor in its use. Students can reflect on what was covered during the class, and can come up with questions or discussion points they want to have clarified. They can send a message off to their instructor or to other students and get a fairly fast response. I personally check my E-mail messages five or six times a day, and will generally check it once in the late evening. Therefore, my students almost never have to wait more than a few hours to get an answer. In addition, I require my students to check their messages twice a day, so if they get a question from another student, they will be able to respond quickly also.

Supplemental Use

The majority of distance education courses currently underway at UAS use the E-mail system as a supplement to the course. Students receive instruction via audio or video cassettes, audioconferences and the like, and generally respond to the professor or other students using phones, faxes, the US mail and so on. The E-mail system is available and is used to transmit information between and among the students and professor. There is a lot of overlap between the "backbone" use and the "supplemental" use of E-mail. The distinguishing features are the depth of use and whether its use is a requirement or not. We classify it as supplement if it is not one of the major delivery systems for the course.

Problems of E-mail Use

There are several problems with the use of E-mail to conduct distance education courses. The first is dependability. Since most of the phone systems in Alaska use land-lines and microwave transmission, there are often times when line noise (static) is picked up and causes weird things to appear on the screen; symbols, marks, wiggly lines and so on. The one I like the most, appears to be a happy face! However, these line noises are quite distracting, especially to the neophyte computer user. Additionally, if lines are down or, as in some areas, there are not a sufficient number of lines, connecting to the system is a time-consuming and/or frustrating task.

Many students do not have access to modems. A modem is a device that allows the computer to send and receive data using telephone system. Since computers process and handle information in a manner which does not allow transmission of data across a phone line without a modem, not having a modem is a road-block for the students. Last year, one of the education faculty members had a grant funded which allowed UAS to send a dozen or so modems to the "out-reach" areas for use in a course which had an E-mail backbone. That has helped somewhat, but there are still a large number of students in our area that do not have modems and are, therefore, unable to participate using E-mail.

Another problem, as viewed by some professors, is the lack of interaction among the students. If the students do not send their messages to all the other students, that is true. This problem is addressed, and corrected by electronic conferencing.

In my opinion, the most serious problem we have is with the professors. We have some who, under no circumstances including threat of death, life in prison, or hanging by their thumbs, will use E-mail. They consider it unwieldy, time-consuming, awkward, and "not traditional" teaching. I agree, it can be -- but it also has many advantages going for it too. I feel the advantages far outweigh the disadvantages.

Advantages of E-mail

One of the main advantages of using E-mail, I have mentioned several times already -- the information can be access by the student whenever it is convenient for him. This allows students who are working night shifts, or full-time jobs, or who have other commitments and are unable

to attend classes at a scheduled time to still take the class. This is the reason why we have distance education in the first place -- the student and teacher are separated by time and\or distance.

E-mail is economical. If the students compose and edit their documents off-line, the telephone connect time is quite short and, therefore, rather inexpensive. Certainly much less expensive than satellite transponder time, or hours of audioconference connect time.

When the students construct their textual messages, they create, edit, reflect, re-write, and re-edit their documents. During this process, they improve their communication skills -- they have more thorough and thoughtful communications, than they do in traditional, face-to-face classrooms. The flip-side of this coin, is the instructors must have detailed, prepared, and well-organized assignments and instructional presentations. The students receive, generally speaking, more efficient and effective instruction.

All correspondence can be logged in and archived. If several students have questions over the same area of instruction, the professor can modify the instruction and processes. With this continual redefining and updating the course, the course will improve quickly and noticeably.

E-mail allows all students to participate and ask questions they might not ask in class. Students who have cultural preferences for not speaking during class, shy students, or students who are unsure of an answer can respond with a degree of anonymity. E-mail has also been shown to be effective with physically-challenged students.

Lastly, another advantage is, as mentioned previously, the rapid turn around time for responses. Rapid turn around time is critical for effective distance education environments.

Electronic Conferencing

Electronic conferencing has most of the advantages of E-mail, while eliminating some of its disadvantages. Students can access it when they want to, there is anonymity to a degree, and the turn around time is fairly rapid. One of the disadvantages of E-mail, is the lack of interaction among and between the students. This problem is eliminated with electronic conferencing. In fact, it is the major function of it.

My Use of PortaCOM

I am not unique in the manner in which I use electronic conferencing. I believe the way I use it is representative of its use by most other faculty. I use PortaCOM with all of my classes; both traditional classroom-based courses and distance delivered courses. I give an account to each of the students and require them to log on to the conference at least twice a week. In the beginning, I will "salt the mine" so to speak. I put up notices and comments that I hope will create controversy or at the minimum, cause people to reply back to me. Sooner or later I will hit upon a topic that causes a major "eruption" from the students as they rush in to defend, oppose, or explain a position. When the students start raising issues with one another, or clarifying points that the others disagree with, I tend to stay out of it. Occasional, if I notice a particular student is not responding, I will interject a comment specifically intended to elicit a response from that

student. If that does draw him in, I will direct a question to him. Once the students starts responding, they rarely stop with just one comment. If I have a notice about the class, such as I am going to be late, or the mail plane did not get the video tapes out because of the weather, it is quite convenient to post it and let everyone know. I have also found it useful, when I have had both a traditional class and a distant class on the same subject during the same semester, to join the two conferences into one. The interaction is marvelous and extremely productive.

Some electronic conferencing systems will not allow any private correspondence between members. That would be a serious, in my opinion -- fatal, drawback. Our conferencing system does not have that problem. We can send personal messages to folks, without having to exit PortaCOM and enter into E-mail. In the pass year, I have gotten much more use out of electronic conferencing with my students than with just E-mail by itself.

The Future

UAS is moving more and more in the direction of ITFS and interactive satellite transmission of instruction. Uplinks are being planned or are in place at all three campuses. The Juneau campus has an interactive classroom/television studio and one is being planned at the Sitka Campus. The days of the audioconferences for UAS are numbered. However, as we get further into satellite delivery, we will have to continue to rely on E-mail and PortaCOM to supplement the distant classes. Not all students will be able to reach the professor during on-camera class-time. Nor will all students be able to reflect on the instruction enough during "air time" to properly formulate their questions. The professors will have to organize conferences and include E-mail correspondence to continue to be effective. The audioconferences which do take place and the video taped courses will also have to rely on E-mail. Although it is an old technology, relatively speaking, E-mail at UAS has a bright future.

Conclusion

Between the two electronic message systems, I feel that my distant students and I have as much, if not more, personal communication than my traditional students and I have. Correspondence between students in distant settings and professors is easier, in many cases, than in traditional settings. Material can be presented, questions can be answered, discussion can take place, and learning can be enhanced -- all via electronic communications. Electronic mail and electronic conferencing enhance and supplement traditional classroom and distance education experiences. They can also be the sole method of distance delivery. They are cost-effective and have short learning curves to get up-to-speed. In a rural setting such as Alaska, telecommunications are essential to providing distance education.